

ST640: Design and Linear Modeling I

Outline

Jennifer A. Hoeting

March 9, 2000

- I.** Course overview
- II.** Review of matrix theory
- III.** Multivariate distribution theory
 - A.** Multivariate normal distribution
 - B.** Distribution of quadratic forms
 - C.** Independence of linear and quadratic forms
 - D.** Other noncentral distributions
- IV.** Standard linear model: prediction, estimation and inference
 - A.** Prediction
 - B.** Estimation of parameters
 - 1. Estimation via least squares
 - 2. Unconstrained Optimization (estimation via maximum likelihood)
 - 3. Constrained Optimization
 - 4. BLUE
 - 5. Reparameterization
 - 6. Partitioning the model
 - C.** Inference
 - 1. Tests of linear hypotheses
 - 2. Confidence Intervals
 - 3. Simultaneous Inference
 - a.** LSD
 - b.** Bonferroni
 - c.** Scheffé
 - d.** Tukey
 - e.** Multivariate t
 - f.** Summary
- V.** Regression Models
- VI.** Analysis of Variance Models